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Amendments to the Specification

Replace paragraph [0006] with the following:

During manufacturing, servo information is encoded on the disc and subsequently used to accurately locate the head. The written servo information is used subsequently to locate the actuator assembly/head head at the required position on the disc surface and hold it very accurately in position during a read or write operation. The servo information is written or encoded onto the disc with a machine commonly referred to as a servo track writer (hereinafter STW). At the time the servo information is written, the disc drive is typically at the "head disc assembly" (hereinafter HDA) stage. The HDA includes most of the mechanical drive components but does not typically include all the drive electronics. During the track writing process, the STW precisely locates the ~~head~~ heads relative to the disc ~~surface~~ surfaces and writes the servo information thereon.

Replace paragraph [0017] with the following:

An alternative ~~apparatus~~ embodiment includes a manufacturing station configured to perform one of the above-mentioned methods automatically. It optionally includes a device-specific controller configured to use the calibration value in a normal operating mode.

Replace paragraph [0021] with the following:

Examples of the above-mentioned ~~embodiment~~ embodiments are shown and described in detail below. Additional features and benefits will become apparent upon reviewing the following figures and their accompanying description.

Replace paragraphs [0022-0023] with the following:

FIG. 1 shows a method in accordance with embodiments of the present invention.

FIG. 2 shows a data handling system in accordance with embodiments of the present invention, to scale.

Replace paragraphs [0028-0030] with the following:

FIG. 7 shows another method in accordance with embodiments of the present invention.

FIG. 8 shows yet another method in accordance with embodiments of the present invention.

FIG. 9 shows another data handling system in accordance with embodiments of the present invention schematically, illustrating how a logical track mapping can affect system performance.

Replace paragraphs [0031-0032] with the following:

Although the examples below show more than enough detail to allow those skilled in the art to practice embodiments of the present invention, subject matter regarded as the embodiments of the invention is broader than any single example below. The scope of the present ~~invention~~ embodiments is distinctly defined, however, in the claims at the end of this document.

To avoid needless distractions from the essence of the present ~~invention~~ embodiments, like-numbered reference numerals appearing in a later figure generally refer to the same elements as those in an earlier figure. Also, numerous aspects of basic engineering and of positioning technologies that are not a part of the present ~~invention~~ embodiments (or are well known in the art) are omitted for brevity. For example, this document does not articulate detailed and diverse methods for writing a servo sector. Neither does it include implementation decisions such as what kind of error correction codes to use or what the physical track width distribution will be. Specific techniques for constructing disc stacks are likewise omitted, typically being a matter of design choice to those of ordinary skill in that field of technology.

Replace paragraph [0035] with the following:

Turning now to FIG. 1, there is shown a method 1500 of the present ~~invention~~ embodiments including steps 1520 through 1550. Data surfaces are configured 1530 on a co-rotatable disc stack, each data surface having a track set, the track sets having a radially-dependent incongruity between them. To ensure that this incongruity is kept small enough, a logical track mapping is used 1540 that optimizes a headswitch seek within each of many intermediate logical cylinders identified in the mapping. A track mapping "optimizes" a headswitch seek between a first surface and a given track on a second surface if no track on the first surface would result in a shorter average seek size when switching between the first and second surfaces' heads.

Replace paragraph [0037] with the following:

Servo and user data travels through a selected one of the heads 164, 264 and flex cable 280 to control circuitry on controller board 266. (Controller board 266 is configured to perform a method of the present ~~invention~~ embodiments shown in FIG. 1, FIG. ~~10~~ 7 or

FIG. ~~11~~ 8.) Flex cable 280 maintains an electrical connection by flexing as each head 164, 264 seeks along its path between tracks on disc(s) 189, 289. During a seek operation, the overall track position of heads 164, 264 is controlled through the use of a voice coil motor (VCM), which typically includes a coil 267 fixedly attached to actuator assembly 261, as well as one or more permanent magnets 268 which establish a magnetic field in which coil 267 is immersed.

Replace paragraph [0058] with the following:

One technique for assigning tracks to a common cylinder includes a step of urging an actuator against a crash stop so as to follow a path (such as 650) having a uniform absolute radius. This is done to identify an ~~innermost~~ outermost "partially follow-able" track that cannot be fully followed due to interference by the crash stop. This is used to find the outermost fully follow-able track 530, 560 on each surface. Assigning track pairs 530 & 560, 4530 & 4560 and 8530 & 8560 each to a common cylinder creates a "best case" seek size at the outermost position 499, a close-to-typical seek size at the intermediate position 497, and a worst case seek size at the innermost position 495. Even though hundreds or thousands of the outermost tracks will each correspond with a track with which it logically overlaps, this configuration leaves room for improvement. For example, suppose that all of the physical tracks on disc 289 are added to a constant selected so that a logically optimal track 4569 corresponds with track 4530. This results in improved performance at the intermediate and innermost positions 497, 495 reducing the average headswitch seek length for each pair of tracks near and between these positions. This improves overall headswitch performance by reducing an overall headswitch seek length (i.e. averaged across the entire pair of data surfaces).

Replace paragraphs [0061-0062] with the following:

FIG. 8 shows a method 800 that includes steps 805 through 875, optionally used in conjunction with method 700 of FIG. 7. Method 800 uses a logical track mapping of first and second non-coaxial track sets so as to improve a headswitch seek within each of ~~many most of~~ the logical cylinders identified in the mapping.

At a preliminary step ~~705,~~ first and second pre-written discs are installed 810 so that the first disc contains the first track set which has a first central axis, so that the second disc contains the second track set which has a second central axis, and so that the first and second central axes are parallel and offset by several times more than a nominal track width. Onto the same base a rotary actuator is installed 815. The actuator is configured so that a first head can access the first track set, so that a second head can access the second track set, and so that the heads are not equidistant from a rotational axis of the actuator. A crash stop is positioned so that the actuator can contact the crash stop while at least one of the heads is not over any track 825.

Replace paragraph [0070] with the following:

For an actuator following an intermediate logical cylinder on a "source" data surface, it is desirable to find a logical mapping such that an average headswitch seek will be small. More preferably, like-numbered tracks will overlap logically. Suppose that a consecutive series of many intermediate tracks 975 on data surface 907 are selected for optimization. Preferably the many tracks 975 are selected to include a track X that is between 0.01M and 0.99M, and more preferably a track X that is between ~~0.5M~~ 0.1M and 0.9M. Note that this is possible even if heads 961 & 962 have a huge (physical) radial offset, so that the track X of surface 907 does not physically overlap the track X of surface 908.

Replace paragraphs [0074-0077] with the following:

Moving now to an innermost region 926, innermost mapped track 988 has a logical track number of M-1 and a range 923. According to the present ~~invention~~ embodiments, the mapping is optionally executed so that a track 988 does not logically overlap another track 978 that is like-numbered (e.g. sharing the track number M-1).

In terms of method 800 of FIG. 8, in a normal operating mode, head 961 stores a first portion of a datafile on track X of surface 907 using mapping calibration values O_1&O_2 retrieved from a system track on data surface 907. (A system track can be found fairly quickly without the calibration values, such as by placing it just outside of logical track zero 972.) The first portion of the datafile is written with the position of actuator 960 as shown in FIG. 9. Then a (same-cylinder) headswitch is performed to activate head 962 and to deactivate head 961. As a part of the headswitch, actuator 960 generally must execute a seek so that head 962 is stably following a like-numbered track of surface 908 (at 985). Because of the present ~~invention~~ embodiments, throughout the mapped track ranges, this seek will usually be short. After the headswitch, actuator 960 moves in tandem with disc 980 relative to scale 901, and a second portion of the datafile is stored on track X of surface 908.

It is to be understood that even though numerous characteristics and advantages of various embodiments of the invention have been set forth in the foregoing description, together with details of the structure and function of various embodiments of the invention, this disclosure is illustrative only. Changes may be made in detail, especially in matters of structure and arrangement of parts within the principles of the present ~~invention~~ embodiments to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed. For example, the particular elements may vary depending on the particular position monitoring application while maintaining substantially the same functionality. Although the more detailed embodiments described above relate to track identifier mappings involving simple additions, other applications involving more complex mappings can readily benefit from these teachings without departing from the scope and spirit of the embodiments of the present invention.

Moreover, it will be appreciated by those skilled in the art that the selection of a suitable track identifier mapping scheme involves several trade-offs. The best solution will depend on the application, and except as specified below, no particular solution to this trade-off is of critical importance to the present ~~invention~~ embodiments. A selection of designs will typically be available and readily derived, depending on the robustness and other performance characteristics required. One of ordinary skill will be able to use the above description to design and implement a variety of methods and devices using suitable track identifier mappings in light of the teachings above, without undue experimentation.